

ABSTRACT

The present invention provides an animal model which overexpresses regucalcin, a calcium-binding protein that is inherently expressed in the liver and the like of the higher animal, and which is characterized by a showing of bone pathology typified by osteoporosis. When regucalcin expression is lowered, it induces other physiological abnormalities. In the present invention, cDNA encoding the full length of regucalcin protein was cloned from a rat liver cDNA library, ORF was cut out, and introduced into an expression vector (pCXN2). The pCXN2 gene expression vector containing ORF cDNA was microinjected into the male pronucleus of a fertilized egg of rat which was subsequently transplanted into the uterine tube of a host rat to generate transgenic rats homozygous for regucalcin. The transgenic rats are characterized by remarkable bone pathology, morphologically as well as biochemically, and by significant suppression of body weight gain, and are therefore useful for screening of preventive and therapeutic agents related to bone diseases.